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LOGINID:ssspat1756mja

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

\*\*\*\*\* Welcome to STN International \*\*\*\*\*

NEWS	1		Web Page for STN Seminar Schedule - N. America
NEWS	2	JAN 02	STN pricing information for 2008 now available
NEWS	3	JAN 16	CAS patent coverage enhanced to include exemplified prophetic substances
NEWS	4	JAN 28	USPATFULL, USPAT2, and USPATOLD enhanced with new custom IPC display formats
NEWS	5	JAN 28	MARPAT searching enhanced
NEWS	6	JAN 28	USGENE now provides USPTO sequence data within 3 days of publication
NEWS	7	JAN 28	TOXCENTER enhanced with reloaded MEDLINE segment
NEWS	8	JAN 28	MEDLINE and LMEEDLINE reloaded with enhancements
NEWS	9	FEB 08	STN Express, Version 8.3, now available
NEWS	10	FEB 20	PCI now available as a replacement to DPCI
NEWS	11	FEB 25	IFIREF reloaded with enhancements
NEWS	12	FEB 25	IMSPRODUCT reloaded with enhancements
NEWS	13	FEB 29	WPINDEX/WPIDS/WPIX enhanced with ECLA and current U.S. National Patent Classification
NEWS	14	MAR 31	IFICDB, IFIPAT, and IFIUDB enhanced with new custom IPC display formats
NEWS	15	MAR 31	CAS REGISTRY enhanced with additional experimental spectra
NEWS	16	MAR 31	CA/CAPLUS and CASREACT patent number format for U.S. applications updated
NEWS	17	MAR 31	LPCI now available as a replacement to LDPCI
NEWS	18	MAR 31	EMBASE, EMBAL, and LEMBASE reloaded with enhancements
NEWS	19	APR 04	STN AnaVist, Version 1, to be discontinued
NEWS	20	APR 15	WPIDS, WPINDEX, and WPIX enhanced with new predefined hit display formats
NEWS	21	APR 28	EMBASE Controlled Term thesaurus enhanced
NEWS	22	APR 28	IMSRESEARCH reloaded with enhancements
NEWS	23	MAY 30	INPAFAMDB now available on STN for patent family searching
NEWS	24	MAY 30	DGENE, PCTGEN, and USGENE enhanced with new homology sequence search option
NEWS	25	JUN 06	EPFULL enhanced with 260,000 English abstracts
NEWS	26	JUN 06	KOREAPAT updated with 41,000 documents
NEWS	27	JUN 13	USPATFULL and USPAT2 updated with 11-character patent numbers for U.S. applications
NEWS	28	JUN 19	CAS REGISTRY includes selected substances from web-based collections
NEWS	29	JUN 25	CA/CAPLUS and USPAT databases updated with IPC reclassification data
NEWS	30	JUN 30	AEROSPACE enhanced with more than 1 million U.S. patent records
NEWS	31	JUN 30	EMBASE, EMBAL, and LEMBASE updated with additional options to display authors and affiliated organizations
NEWS	32	JUN 30	STN on the Web enhanced with new STN AnaVist Assistant and BLAST plug-in

NEWS 33 JUN 30 STN AnaVist enhanced with database content from EPFULL

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,  
AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

NEWS HOURS STN Operating Hours Plus Help Desk Availability  
NEWS LOGIN Welcome Banner and News Items  
NEWS IPC8 For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that  
specific topic.

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research. Use for software development or design or implementation  
of commercial gateways or other similar uses is prohibited and may  
result in loss of user privileges and other penalties.

\* \* \* \* \* STN Columbus \* \* \* \* \*

FILE 'HOME' ENTERED AT 15:52:57 ON 24 JUL 2008

=> file reg	SINCE FILE	TOTAL
COST IN U.S. DOLLARS	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'REGISTRY' ENTERED AT 15:53:17 ON 24 JUL 2008  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2008 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 23 JUL 2008 HIGHEST RN 1035697-56-3  
DICTIONARY FILE UPDATES: 23 JUL 2008 HIGHEST RN 1035697-56-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 9, 2008.

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and  
predicted properties as well as tags indicating availability of  
experimental property data in the original document. For information  
on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> phthalocyanine  
PTHALOCYANINE IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s phthalocyanine  
L1 17947 PHTHALOCYANINE  
  
=> s (phthalocyanine or phthalocyanato)  
17947 PHTHALOCYANINE  
13 PHTHALOCYANATO  
L2 17948 (PHTHALOCYANINE OR PHTHALOCYANATO)

```

=> s 12 and cobalt
    321029 COBALT
L3    1578 L2 AND COBALT

=> s 12 and (water or ethanol or methanol or pyridine)
    2990 WATER
    102 WATERS
    3091 WATER
        (WATER OR WATERS)
    268924 ETHANOL
    345146 METHANOL
    1074011 PYRIDINE
        3 PYRIDINES
    1074011 PYRIDINE
        (PYRIDINE OR PYRIDINES)
L4    613 L2 AND (WATER OR ETHANOL OR METHANOL OR PYRIDINE)

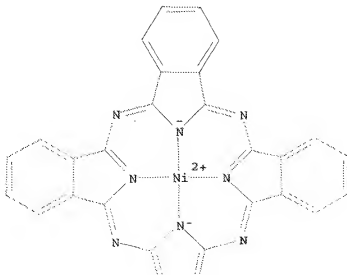
=> s 14 and (isocyanat? or cyano)
    114966 ISOCYANAT?
    885200 CYANO
L5    30 L4 AND (ISOCYANAT? OR CYANO)

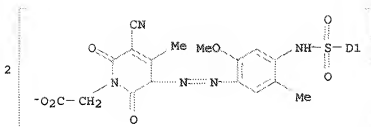
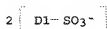
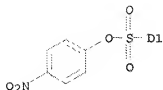
=> d scan 1-10
'1-10' IS NOT A VALID FORMAT FOR FILE 'REGISTRY'

L5    30 ANSWERS  REGISTRY  COPYRIGHT 2008 ACS on STN
IN    Nickelate(4-), [[3,3'-[[C-[(4-nitrophenoxy)sulfonyl]-C,C-disulfo-
      29H,31H-phthalocyanine-C,C-diyl]bis[sulfonylimino(2-methoxy-5-methyl-4,1-
      phenylene)azo]]bis[5-cyano-3,6-dihydro-4-methyl-2,6-dioxo-1(2H)-
      pyridineacetato]](6-)-N29,N30,N31,N32]- (9CI)
MF    C72 H45 N19 Ni O25 S5
CI    CCS, IDS, COM

```

PAGE 1-A





The following are valid formats:

Substance information can be displayed by requesting individual fields or predefined formats. The predefined substance formats are: (RN = CAS Registry Number)

REG - RN  
 SAM - Index Name, MF, and structure - no RN  
 FIDE - All substance data, except sequence data  
 IDE - FIDE, but only 50 names  
 SQIDE - IDE, plus sequence data  
 SQIDE3 - Same as SQIDE, but 3-letter amino acid codes are used  
 SQD - Protein sequence data, includes RN  
 SQD3 - Same as SQD, but 3-letter amino acid codes are used  
 SQN - Protein sequence name information, includes RN

EPROP - Table of experimental properties  
 PPROP - Table of predicted properties  
 PROP - EPROP, ETAG, PPROP and SPEC

Any CA File format may be combined with any substance format to obtain CA references citing the substance. The substance formats must be cited first. The CA File predefined formats are:

ABS -- Abstract  
 APPS -- Application and Priority Information  
 BIB -- CA Accession Number, plus Bibliographic Data  
 CAN -- CA Accession Number  
 CBIB -- CA Accession Number, plus Bibliographic Data (compressed)  
 IND -- Index Data  
 IPC -- International Patent Classification  
 PATS -- PI, SO  
 STD -- BIB, IPC, and NCL

IABS -- ABS, indented, with text labels  
 IBIB -- BIB, indented, with text labels  
 ISTD -- STD format, indented

OBIB ----- AN, plus Bibliographic Data (original)  
 OIBIB ----- OBIB, indented with text labels

SBIB ----- BIB, no citations  
 SIBIB ----- IBIB, no citations

The ALL format gives FIDE BIB ABS IND RE, plus sequence data when it is available.

The MAX format is the same as ALL.

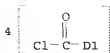
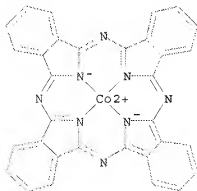
The TALL format is the same as ALL with BIB ABS and IND indented, with text labels.

For additional information, please consult the following help messages:

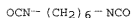
HELP DFIELDS -- To see a complete list of individual display fields.  
 HELP FORMATS -- To see detailed descriptions of the predefined formats.  
 HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L5 30 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Cobalt, [29H,31H-phthalocyanine-C,C,C,C-tetracarboxyl  
 tetrachloridato(2-)-N29,N30,N31,N32]-, polymer with 1,6-diisocyanatohexane  
 and 2,2'-(oxybis(2,1-ethanediyl)oxy)]bis[ethanol] (9CI)  
 MF (C36 H12 Cl4 Co N8 O4 . C8 H18 O5 . C8 H12 N2 O2)x  
 CI PMS

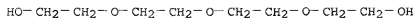
CM 1



CM 2



CM 3

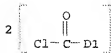
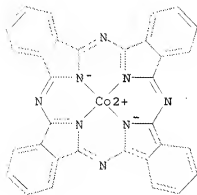


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):

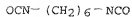
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L5 30 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
IN Cobalt, [29H,31H-phthalocyanine-C,C-dicarbonyl dichloridato(2-)-  
N29,N30,N31,N32]-, polymer with 1,6-diisocyanatohexane,  
2,2'-[1,2-ethanediylbis(oxy)]bis[ethanol] and 1,6-hexanediol (9CI)  
MF (C34 H14 Cl2 Co N8 O2 . C8 H12 N2 O2 . C6 H14 O4 . C6 H14 O2)x  
CI PMS

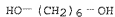
CM 1



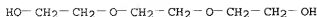
CM 2



CM 3

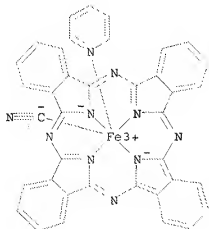


CM 4



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L5 30 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
IN Iron, (cyano-C)[29H,31H-phthalocyaninato(2-)-  
N29,N30,N31,N32](pyridine)-, (OC-6-14)- (9CI)  
MF C38 H21 Fe N10  
CI CCS



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> d his

(FILE 'HOME' ENTERED AT 15:52:57 ON 24 JUL 2008)

FILE 'REGISTRY' ENTERED AT 15:53:17 ON 24 JUL 2008

L1 17947 S PHTHALOCYANINE  
L2 17948 S (PHTHALOCYANINE OR PHTHALOCYANATO)  
L3 1578 S L2 AND COBALT  
L4 613 S L2 AND (WATER OR ETHANOL OR METHANOL OR PYRIDINE)  
L5 30 S L4 AND (ISOCYANAT? OR CYANO)

=> l5 not polymer

L5 IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

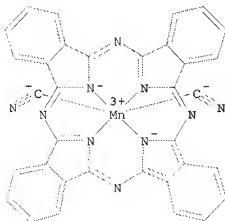
=> s l5 not polymer

953867 POLYMER  
16464 POLYMERS  
964196 POLYMER  
(POLYMER OR POLYMERS)

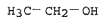
L6 15 L5 NOT POLYMER

=> d scan

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
IN Manganate(1-), bis(cyano-C)[29H,31H-phthalocyaninato(2-)-  
N29,N30,N31,N32]-, (OC-6-12)-, potassium, compd. with ethanol (1:2)  
(9CI)  
MF C34 H16 Mn N10 . 2 C2 H6 O . K  
CM 1



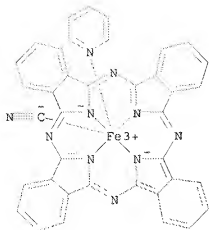
CM 2



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

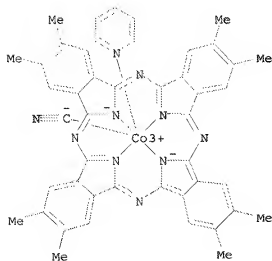
L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
IN Iron, (cyano-C)[29H,31H-phthalocyaninato(2-)-  
N29,N30,N31,N32](pyridine)-, (OC-6-14)- (9CI)  
MF C38 H21 Fe N10  
CI CCS





HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Cobalt, (cyano-C) [2,3,9,10,16,17,23,24-octamethyl-29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32] (pyridine)-, (OC-6-14) - (9CI)  
 MF C46 H37 Co N10  
 CI CCS



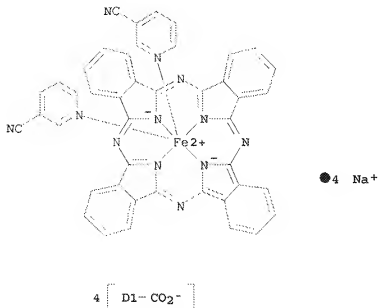
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Iron, ammine[μ-(cyano-C:N)]bis[29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32] (pyridine)di- (9CI)  
 MF C70 H40 Fe2 N19  
 CI CCS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

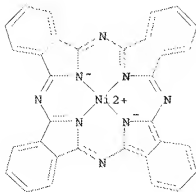
L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Ferrate(4-), [29H,31H-phthalocyanine-C,C,C,C-tetracarboxylato(6-)-  
 N29,N30,N31,N32]bis(3-pyridinecarbonitrile-N1)-, tetrasodium (9CI)  
 MF C48 H20 Fe N12 O8 . 4 Na  
 CI CCS, IDS



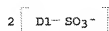
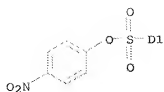
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Nickelate(4-), [[3,3'-[[C-[(4-nitrophenoxy)sulfonyl]-C,C-disulfo-  
 29H,31H-phthalocyanine-C,C-diyl]bis[sulfonylimino(2-methoxy-5-methyl-4,1-  
 phenylene)azo]]bis[5-cyano-3,6-dihydro-4-methyl-2,6-dioxo-1(2H)-  
 pyridineacetato]](6-)-N29,N30,N31,N32]-, tetrasodium (9CI)  
 MF C72 H45 N19 Ni O25 S5 . 4 Na  
 CI CCS, IDS

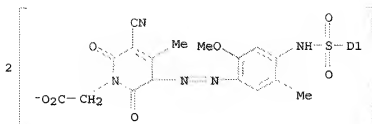
PAGE 1-A



PAGE 2-A

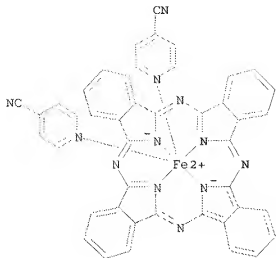


PAGE 3-A



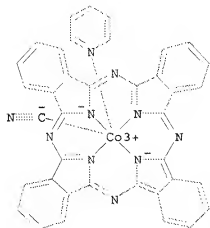
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Iron, [29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]bis(4-  
 pyridinecarbonitrile-N1)-, (OC-6-12)- (9CI)  
 MF C44 H24 Fe N12  
 CI CCS, COM



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

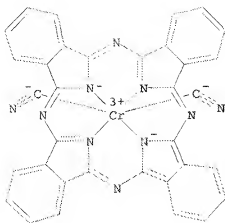
L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Cobalt, (cyano-C) [29H,31H-phthalocyaninato(2-)-  
 N29,N30,N31,N32] (pyridine)-, (OC-6-14)- (9CI)  
 MF C38 H21 Co N10  
 CI CCS



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 15 ANSWERS REGISTRY COPYRIGHT 2008 ACS on STN  
 IN Chromate(1-), bis(cyano-C) [29H,31H-phthalocyaninato(2-)-  
 N29,N30,N31,N32]-, (OC-6-12)-, sodium, compd. with ethanol (1:1),  
 dihydrate (9CI)  
 MF C34 H16 Cr N10 . C2 H6 O . 2 H2 O . Na

CM 1



● Na<sup>+</sup>

CM 2

H<sub>3</sub>C-CH<sub>2</sub>-OH

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> s l6 and cobalt  
321029 COBALT  
L7 4 L6 AND COBALT

=> file reg	SINCE FILE	TOTAL
COST IN U.S. DOLLARS	ENTRY	SESSION
FULL ESTIMATED COST	65.48	65.69

FILE 'REGISTRY' ENTERED AT 15:58:14 ON 24 JUL 2008  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2008 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 23 JUL 2008 HIGHEST RN 1035697-56-3  
DICTIONARY FILE UPDATES: 23 JUL 2008 HIGHEST RN 1035697-56-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 9, 2008.

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s 17

321029 COBALT  
L8 4 L6 AND COBALT

=> d all 1-4

L8 ANSWER 1 OF 4 REGISTRY COPYRIGHT 2008 ACS on STN  
RN 121589-36-4 REGISTRY  
ED Entered STN: 14 Jul 1989  
CN Iron, bis[μ-(cyano-C:N)] [29H,31H-phthalocyaninato(2-)-  
N29,N30,N31,N32]bis[ [29H,31H-phthalocyaninato(2-)-  
N29,N30,N31,N32] (pyridine)cobalt]- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 29H,31H-Phthalocyanine, cobalt-iron complex

MF C108 H58 Co2 Fe N28

CI CCS

SR CA

LC STN Files: CA, CAPLUS

DT.CA CAPlus document type: Journal

RL.NP Roles from non-patents: PREP (Preparation)

#### Ring System Data

Elemental Analysis EA	Elemental Sequence ES	Size of the Rings SZ	Ring System Formula RF	Ring Identifier RID	RID Occurrence Count
C5N	NC5	6	C5N	46.156.30	2
C4N-C4N-C4N-	NC4-NC4-NC4-	5-5-5-5-6-6-	C32CoN8	13605.12.6	2
C4N-C2CoN3-	NC4-CoNCNCN-	6-6-6-6-6-6-			
C2CoN3-	CoNCNCN-				
C2CoN3-	CoNCNCN-				
C2CoN3-C6-C6-	CoNCNCN-C6-				
C6-C6	C6-C6-C6				
C4N-C4N-C4N-	NC4-NC4-NC4-	5-5-5-5-6-6-	C32FeN8	13605.36.1	1
C4N-C2FeN3-	NC4-FeNCNCN-	6-6-6-6-6-6-			
C2FeN3-	FeNCNCN-				
C2FeN3-	FeNCNCN-				
C2FeN3-C6-C6-	FeNCNCN-C6-				
C6-C6	C6-C6-C6				

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

2 REFERENCES IN FILE CA (1907 TO DATE)

2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

#### REFERENCE 1

AN 116:14698 CA  
TI Bridged mixed valence phthalocyaninato-metal compounds  
AU Hirsch, A.; Hanack, M.  
CS Inst. Org. Chem., Tuebingen, D-7400, Germany  
SO NATO ASI Series, Series E: Applied Sciences (1990), 182(Conjugated Polym.  
Mater.: Oppor. Electron., Optoelectron., Mol. Electron.), 163-9  
CODEN: NAESDI; ISSN: 0168-132X  
DT Journal  
LA English  
CC 78-7 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 76  
AB Bridged mixed valence phthalocyaninato-metal dimers trimers and polymers  
(H2Pc = phthalocyanine, M = Fe, Co) with the central metal in the oxidation  
state of 2+ and 3+ and cyanide and pyrazine as bridging ligands have been

synthesized. The synthesis has been carried out either by coupling of  $\text{PcM(L)CN}$  ( $\text{M} = \text{Fe}, \text{Co}$ ;  $\text{L} = \text{py}$ , pyrazine (pyz), tert-butylpyridine) with  $\text{PcFe(NH}_3)_2$  and substituting the weak coordinated ammonia or by thermal decomposition of  $\text{PcFe(pyz)CN}$ . The IR, Moessbauer and elec. properties of these compds. have been investigated.

ST elec cond cobalt iron cyano phthalocyaninato; cobalt iron cyano phthalocyaninato pyridine pyrazine

IT Electric conductivity and conduction  
(of cobalt or iron or cobalt-iron phthalocyaninato pyridine or pyrazine polymers with and without cyanide)

IT 74591-76-7  
RL: PRP (Properties)  
(Moessbauer spectrum of)

IT 84279-54-9, Cyanophthalocyaninatopyridinecobalt 94241-56-2,  
Cyanophthalocyaninatopyridineiron 136292-30-3 136313-95-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reaction of, with iron ammine phthalocyaninato complex)

IT 136844-46-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reaction of, with iron ammine phthalocyaninato complex and Moessbauer spectrum of)

IT 25232-77-3, Diamminephthalocyaninatoiron  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reactions of, with iron and cobalt cyano phthalocyaninato complexes with and without pyridine or pyrazine)

IT 74-90-8DP, Hydrocyanic acid, complexes with iron and phthalocyanine and pyrazine 290-37-9DP, Pyrazine, complexes with iron and phthalocyanine with and without cyanide 574-93-6DP, Phthalocyanine, complexes with iron and pyrazine with and without cyanide 7439-89-6DP, Iron, complexes with phthalocyanine and pyrazine with and without cyanide  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(mixed valence polymer, preparation of, by thermal reduction of iron cyano phthalocyaninato pyrazine complex)

IT 121589-35-3P 121589-36-4P 136313-94-5P 136339-67-8P 136844-44-5P  
136844-45-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and elec. conductivity and Moessbauer spectrum of)

IT 136339-75-8  
RL: PRP (Properties)  
(thermal reduction and Moessbauer spectrum of)

## REFERENCE 2

AN 111:49338 CA

TI Synthesis of bridged mixed valence macrocyclic metal compounds

AU Hanack, M.; Hirsch, A.

CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, Fed. Rep. Ger.

SO Synthetic Metals (1989), Volume Date 1988, 29(2-3), F9-F14  
CODEN: SYMEDZ; ISSN: 0379-6779

DT Journal

LA English

CC 78-7 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 77

AB The bridged-mixed valence dimer  $(\text{py})\text{PcFeCNPCpFe(NH}_3)_2$  ( $\text{H}_2\text{Pc} = \text{phthalocyanine}$ ) and the trimer  $(\text{py})\text{PcCoCNPCpFeCNPCo(py)}$  were prepared by coupling reactions of  $\text{PcFe(py)CN}$  and  $\text{PcCo(py)CN}$  with  $\text{PcFe(NH}_3)_2$ . Elec. conductivity, FT-IR and Moessbauer spectroscopic data are reported and discussed.

ST elec cond cobalt iron phthalocyaninato; cobalt iron cyano phthalocyaninato trimer; iron cobalt cyano phthalocyaninato

IT Electric conductivity and conduction  
(of cobalt-iron and iron-iron cyano phthalocyaninato complexes)

IT 84279-54-9, Cyano(phthalocyaninato)pyridinecobalt 94241-56-2,  
Cyano(phthalocyaninato)(pyridine)iron  
RL: RCT (Reactant); RACT (Reactant or reagent)

IT 84279-53-8  
 RL: PRP (Properties)  
 (elec. conductivity of)

IT 106188-21-0P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and elec. conductivity of)

IT 106157-28-2P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and reaction of, with thionyl chloride or sodium cyanide and  
 oxygen)

IT 106188-18-5P 106210-64-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and reaction of, with water)

IT 106188-13-0P 106188-19-6P 106188-20-9P 106188-22-1P 106188-23-2P  
 106210-63-3P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

IT 104935-13-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, elec. conductivity and reaction of, with butylamine or  
 pyridine)

IT 105693-15-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, elec. conductivity and reaction of, with pyridine)

IT 106188-15-2P 106188-16-3P 106188-17-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, thermal decomposition and reaction of, with sodium cyanide)

IT 106188-14-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, thermal decomposition and reaction of, with sodium cyanide  
 with and  
 without water)

IT 7719-09-7  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cobalt peripherally substituted phthalocyaninato  
 complexes)

IT 27680-28-0 70619-85-1 88946-69-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thionyl chloride or sodium cyanide and oxygen)

IT 35141-17-4, Dichloro(phthalocyaninato)cobalt 84279-51-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (thermal decomposition of)

L8 ANSWER 3 OF 4 REGISTRY COPYRIGHT 2008 ACS on STN  
 RN 106188-21-0 REGISTRY  
 ED Entered STN: 17 Jan 1987  
 CN Cobalt, (cyano-C) [2,3,9,10,16,17,23,24-octamethyl-29H,31H-  
 phthalocyaninato(2-)-N29,N30,N31,N32] (pyridine)-, (OC-6-14)- (9CI)  
 (CA INDEX NAME)

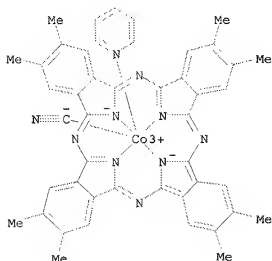
OTHER CA INDEX NAMES:  
 CN 29H,31H-Phthalocyanine, 2,3,9,10,16,17,23,24-octamethyl-, cobalt  
 complex  
 MF C46 H37 Co N10  
 CI CCS  
 SR CA  
 LC STN Files: CA, CAPLUS  
 DT.CA Caplus document type: Journal  
 RL.NP Roles from non-patents: PREP (Preparation); PRP (Properties)

# Ring System Data

Elemental Analysis	Elemental Sequence	Size of the Rings	Ring System Formula	Ring Identifier	RID Occurrence
-----------------------	-----------------------	----------------------	------------------------	--------------------	-------------------



EA	ES	SZ	RF	RID	Count
C5N	NC5	6	C5N	46.156.30	1
C4N-C4N-C4N-	NC4-NC4-NC4-	5-5-5-5-6-6-	C32CoN8	13605.12.6	1
C4N-C2CoN3-	NC4-CoNCNCN-	6-6-6-6-6-6-			
C2CoN3-	CoNCNCN-				
C2CoN3-	CoNCNCN-				
C2CoN3-C6-C6-	CoNCNCN-C6-				
C6-C6	C6-C6-C6				



1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

#### REFERENCE 1

AN 106:42862 CA  
TI Synthesis and properties of peripherally substituted  
phthalocyaninatocobalt complexes with bisaxially coordinated ligands  
AU Hanack, Michael; Fay, Reinhold  
CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
SO Recueil des Travaux Chimiques des Pays-Bas (1986), 105(10), 427-33  
CODEN: RTCPA3; ISSN: 0165-0513  
DT Journal  
LA English  
CC 78-7 (Inorganic Chemicals and Reactions)  
AB The preparation and characterization of peripherally substituted  
phthalocyaninatocobalt compds.,  $\text{Co}(\text{RmPc})\text{Cl}_2$  and  $\text{Na}[\text{Co}(\text{RmPc})(\text{CN})_2]$  ( $\text{R} =$   
 $\text{CH}_3$ ,  $\text{OMe}$ ,  $\text{Cl}$ ,  $m = 8$ ;  $\text{R} = \text{tert-Bu}$ ,  $\text{NO}_2$ ,  $m = 4$ ), are reported. The latter  
can be obtained via 2 methods: either by treatment of  $\text{Co}(\text{RmPc})\text{Cl}_2$  with  
 $\text{NaCN}$  or by the reaction of  $\text{Co}(\text{RmPc})$  with  $\text{NaCN}$  in the presence of  $\text{O}$ .  
Starting from  $\text{Na}[\text{Co}(\text{RmPc})(\text{CN})_2]$  ( $\text{R} = \text{CH}_3$ ,  $m = 8$ ;  $\text{R} = \text{NO}_2$ ,  $m = 4$ ) the  
corresponding cyano-bridged polymers,  $[\text{Co}(\text{RmPc})\text{CN}]_n$ , were obtained. The  
IR, far-IR, UV-visible,  $^1\text{H}$  NMR (in part) and thermogravimetric/DTA data  
are discussed in detail for all the compds. prepared  $[\text{Co}\{(\text{CH}_3)_8\text{Pc}\}(\text{CN})_n]$   
showed a powder conductivity of  $\sigma_{\text{RT}} 5 + 10^{-5} \text{ S/cm}$  ( $E$  0.22 eV),  
whereas  $[\text{Co}\{(\text{NO}_2)_4\text{Pc}\}(\text{CN})_n]$  has a much lower value,  $\sigma_{\text{RT}} 3 + 10^{-9}$   
 $\text{S/cm}$ .  
ST cobalt phthalocyaninato deriv hexacoordinate; cond cobalt phthalocyaninato  
deriv polymer  
IT Electric conductivity and conduction

(coupling reaction of, with iron ammine phthalocyaninato complex)

IT 25232-77-3, Diammine(phthalocyaninato)iron  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (coupling reaction of, with iron and cobalt cyano pyridine  
 phthalocyaninato complexes)

IT 88076-05-5, Cyano(phthalocyaninato)iron polymer  
 RL: PRP (Properties)  
 (elec. conductivity and Moessbauer spectrum of)

IT 84279-53-8, Cyano(phthalocyaninato)cobalt polymer  
 RL: PRP (Properties)  
 (elec. conductivity of)

IT 121589-35-3P 121589-36-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and elec. conductivity and Moessbauer spectrum of)

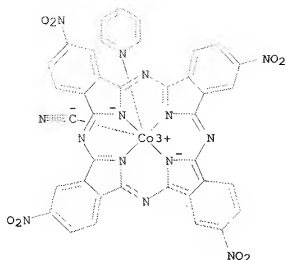
L8 ANSWER 2 OF 4 REGISTRY COPYRIGHT 2008 ACS on STN  
 RN 106188-23-2 REGISTRY  
 ED Entered STN: 17 Jan 1987  
 CN Cobalt, (cyano-C) (pyridine) [2,9,16,23-tetranitro-29H,31H-  
 phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-14)- (9CI) (CA INDEX  
 NAME)

OTHER CA INDEX NAMES:

CN 29H,31H-Phthalocyanine, 2,9,16,23-tetranitro-, cobalt complex  
 MF C38 H17 Co N14 O8  
 CI CCS  
 SR CA  
 LC STN Files: CA, CAPLUS  
 DT.CA Caplus document type: Journal  
 RL.NP Roles from non-patents: PREP (Preparation)

Ring System Data

Elemental Analysis EA	Elemental Sequence ES	Size of the Rings SZ	Ring System Formula RF	Ring Identifier RID	RID Occurrence Count
=====	=====	=====	=====	=====	=====
C5N	NC5	6	C5N	46.156.30	1
C4N-C4N-C4N-	NC4-NC4-NC4-	5-5-5-5-6-6-	C32CoN8	13605.12.6	1
C4N-C2CoN3-	NC4-CoNCNCN-	6-6-6-6-6-6			
C2CoN3-	CoNCNCN-				
C2CoN3-	CoNCNCN-				
C2CoN3-C6-C6-	CoNCNCN-C6-				
C6-C6	C6-C6-C6				



1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

#### REFERENCE 1

- AN 106:42862 CA  
TI Synthesis and properties of peripherally substituted phthalocyaninatocobalt complexes with bisaxially coordinated ligands  
AU Hanack, Michael; Fay, Reinhold  
CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
SO Recueil des Travaux Chimiques des Pays-Bas (1986), 105(10), 427-33  
CODEN: RTCPA3; ISSN: 0165-0513  
DT Journal  
LA English  
CC 78-7 (Inorganic Chemicals and Reactions)  
AB The preparation and characterization of peripherally substituted phthalocyaninatocobalt compds.,  $\text{Co}(\text{RmPc})\text{Cl}_2$  and  $\text{Na}[\text{Co}(\text{RmPc})(\text{CN})_2]$  ( $\text{R} = \text{CH}_3, \text{OMe}, \text{Cl}, m = 8; \text{R} = \text{tert-Bu}, \text{NO}_2, m = 4$ ), are reported. The latter can be obtained via 2 methods: either by treatment of  $\text{Co}(\text{RmPc})\text{Cl}_2$  with NaCN or by the reaction of  $\text{Co}(\text{RmPc})$  with NaCN in the presence of O. Starting from  $\text{Na}[\text{Co}(\text{RmPc})(\text{CN})_2]$  ( $\text{R} = \text{CH}_3, m = 8; \text{R} = \text{NO}_2, m = 4$ ) the corresponding cyano-bridged polymers,  $[\text{Co}(\text{RmPc})(\text{CN})_n]$ , were obtained. The IR, far-IR, UV-visible,  $^1\text{H}$  NMR (in part) and thermogravimetric/DTA data are discussed in detail for all the compds. prepared  $[\text{Co}\{(\text{CH}_3)_8\text{Pc}\}(\text{CN})_n]$  showed a powder conductivity of  $\sigma_{\text{RT}} 5 \times 10^{-5} \text{ S/cm}$  ( $E 0.22 \text{ eV}$ ), whereas  $[\text{Co}\{(\text{NO}_2)_4\text{Pc}\}(\text{CN})_n]$  has a much lower value,  $\sigma_{\text{RT}} 3 \times 10^{-9} \text{ S/cm}$ .  
ST cobalt phthalocyaninato deriv hexacoordinate; cond cobalt phthalocyaninato deriv polymer  
IT Electric conductivity and conduction  
(of cobalt cyano polymeric complexes with peripherally substituted phthalocyaninate)  
IT 36360-43-7, 4,5-Dimethylphthalonitrile  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation reaction of, in presence of cobaltous chloride)  
IT 57-13-6, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation reaction of, with dichlorophthalic anhydride in presence of cobaltous chloride and ammonium molybdate)  
IT 942-06-3, 4,5-Dichlorophthalic anhydride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation reaction of, with urea in presence of cobaltous chloride and ammonium molybdate)

(of cobalt cyano polymeric complexes with peripherally substituted phthalocyaninate)

IT 36360-43-7, 4,5-Dimethylphthalonitrile  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclocondensation reaction of, in presence of cobaltous chloride)

IT 57-13-6, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclocondensation reaction of, with dichlorophthalic anhydride in presence of cobaltous chloride and ammonium molybdate)

IT 942-06-3, 4,5-Dichlorophthalic anhydride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclocondensation reaction of, with urea in presence of cobaltous chloride and ammonium molybdate)

IT 84279-53-8  
 RL: PRP (Properties)  
 (elec. conductivity of)

IT 106188-21-0P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and elec. conductivity of)

IT 106157-28-2P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and reaction of, with thionyl chloride or sodium cyanide and oxygen)

IT 106188-18-5P 106210-64-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and reaction of, with water)

IT 106188-13-0P 106188-19-6P 106188-20-9P 106188-22-1P 106188-23-2P  
 106210-63-3P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

IT 104935-13-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, elec. conductivity and reaction of, with butylamine or pyridine)

IT 105693-15-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, elec. conductivity and reaction of, with pyridine)

IT 106188-15-2P 106188-16-3P 106188-17-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, thermal decomposition and reaction of, with sodium cyanide)

IT 106188-14-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, thermal decomposition and reaction of, with sodium cyanide with and without water)

IT 7719-09-7  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cobalt peripherally substituted phthalocyaninato complexes)

IT 27680-28-0 70619-85-1 88946-69-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thionyl chloride or sodium cyanide and oxygen)

IT 35141-17-4, Dichloro(phthalocyaninato)cobalt 84279-51-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (thermal decomposition of)

L8 ANSWER 4 OF 4 REGISTRY COPYRIGHT 2008 ACS on STN

RN 84279-54-9 REGISTRY

ED Entered STN: 16 Nov 1984

CN Cobalt, (cyano-C) [29H,31H-phthalocyaninato(2-)-

N29,N30,N31,N32] (pyridine)-, (OC-6-14)- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 29H,31H-Phthalocyanine, cobalt complex

## OTHER NAMES:

CN Cyano(phthalocyaninato)pyridinecobalt

MF C38 H21 Co N10

CI CCS

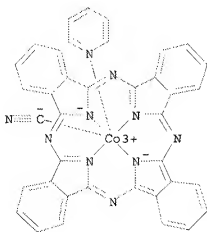
LC STN Files: CA, CAPLUS

DT.CA Caplus document type: Journal

RL.NP Roles from non-patents: PREP (Preparation); PRP (Properties); RACT (Reactant or reagent)

## Ring System Data

Elemental Analysis EA	Elemental Sequence ES	Size of the Rings SZ	Ring System Formula RF	Ring Identifier RID	RID Occurrence Count
=====	=====	=====	=====	=====	=====
C5N	NC5	6	C5N	46.156.30	1
C4N-C4N-C4N-	NC4-NC4-NC4-	5-5-5-5-6-6-	C32CoN8	13605.12.6	1
C4N-C2CoN3-	NC4-CoNCNCN-	6-6-6-6-6-6			
C2CoN3-	CoNCNCN-				
C2CoN3-	CoNCNCN-				
C2CoN3-C6-C6-	CoNCNCN-C6-				
C6-C6	C6-C6-C6				



8 REFERENCES IN FILE CA (1907 TO DATE)

8 REFERENCES IN FILE CAPLUS (1907 TO DATE)

## REFERENCE 1

AN 116:14698 CA

TI Bridged mixed valence phthalocyaninato-metal compounds

AU Hirsch, A.; Hanack, M.

CS Inst. Org. Chem., Tuebingen, D-7400, Germany

SO NATO ASI Series, Series E: Applied Sciences (1990), 182(Conjugated Polym. Mater.: Oppor. Electron., Optoelectron., Mol. Electron.), 163-9  
CODEN: NAESDI; ISSN: 0168-132X

DT Journal

LA English

CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 76

AB Bridged mixed valence phthalocyaninato-metal dimers trimers and polymers (H2Pc = phthalocyanine, M = Fe, Co) with the central metal in the oxidation state of 2+ and 3+ and cyanide and pyrazine as bridging ligands have been synthesized. The synthesis has been carried out either by coupling of

- PcM(L)CN (M = Fe, Co; L = py, pyrazine (pyz), tert-butylpyridine) with PcFe(NH<sub>3</sub>)<sub>2</sub> and substituting the weak coordinated ammonia or by thermal decomposition of PcFe(pyz)CN. The IR, Moessbauer and elec. properties of these compds. have been investigated.
- ST elec cond cobalt iron cyano phthalocyaninato; cobalt iron cyano phthalocyaninato pyridine pyrazine
- IT Electric conductivity and conduction  
(of cobalt or iron or cobalt-iron phthalocyaninato pyridine or pyrazine polymers with and without cyanide)
- IT 74591-76-7  
RL: PRP (Properties)  
(Moessbauer spectrum of)
- IT 84279-54-9, Cyanophthalocyaninatopyridinecobalt 94241-56-2,  
Cyanophthalocyaninatopyridineiron 136292-30-3 136313-95-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reaction of, with iron ammine phthalocyaninato complex)
- IT 136844-46-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reaction of, with iron ammine phthalocyaninato complex and Moessbauer spectrum of)
- IT 25232-77-3, Diamminephthalocyaninatoiron  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reactions of, with iron and cobalt cyano phthalocyaninato complexes with and without pyridine or pyrazine)
- IT 74-90-8DP, Hydrocyanic acid, complexes with iron and phthalocyanine and pyrazine 290-37-9DP, Pyrazine, complexes with iron and phthalocyanine with and without cyanide 574-93-6DP, Phthalocyanine, complexes with iron and pyrazine with and without cyanide 7439-89-6DP, Iron, complexes with phthalocyanine and pyrazine with and without cyanide  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(mixed valence polymer, preparation of, by thermal reduction of iron cyano phthalocyaninato pyrazine complex)
- IT 121589-35-3P 121589-36-4P 136313-94-5P 136339-67-8P 136844-44-5P 136844-45-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and elec. conductivity and Moessbauer spectrum of)
- IT 136339-75-8  
RL: PRP (Properties)  
(thermal reduction and Moessbauer spectrum of)

#### REFERENCE 2

- AN 111:49338 CA
- TI Synthesis of bridged mixed valence macrocyclic metal compounds
- AU Hanack, M.; Hirsch, A.
- CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, Fed. Rep. Ger.
- SO Synthetic Metals (1989), Volume Date 1988, 29(2-3), F9-F14  
CODEN: SYMEDZ; ISSN: 0379-6779
- DT Journal
- LA English
- CC 78-7 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 77
- AB The bridged-mixed valence dimer (py)PcFeCNPcFe(NH<sub>3</sub>) (H<sub>2</sub>Pc = phthalocyanine) and the trimer (py)PcCoCNPcFeNCPCo(py) were prepared by coupling reactions of PcFe(py)CN and PcCo(py)CN with PcFe(NH<sub>3</sub>)<sub>2</sub>. Elec. conductivity, FT-IR and Moessbauer spectroscopic data are reported and discussed.
- ST elec cond cobalt iron phthalocyaninato; cobalt iron cyano phthalocyaninato trimer; iron cobalt cyano phthalocyaninato
- IT Electric conductivity and conduction  
(of cobalt-iron and iron-iron cyano phthalocyaninato complexes)
- IT 84279-54-9, Cyano(phthalocyaninato)pyridinecobalt 94241-56-2,  
Cyano(phthalocyaninato)pyridineiron  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling reaction of, with iron ammine phthalocyaninato complex)

IT 25232-77-3, Diammine(phthalocyaninato)iron  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (coupling reaction of, with iron and cobalt cyano pyridine  
 phthalocyaninato complexes)  
 IT 88076-05-5, Cyano(phthalocyaninato)iron polymer  
 RL: PRP (Properties)  
 (elec. conductivity and Moessbauer spectrum of)  
 IT 84279-53-8, Cyano(phthalocyaninato)cobalt polymer  
 RL: PRP (Properties)  
 (elec. conductivity of)  
 IT 121589-35-3P 121589-36-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and elec. conductivity and Moessbauer spectrum of)

# REFERENCE 3

AN 104:27809 CA  
 TI Synthesis and properties of conducting bridged macrocyclic metal complexes  
 AU Hanack, Michael  
 CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
 SO Israel Journal of Chemistry (1985), 25(3-4), 205-9  
 CODEN: ISJCAT; ISSN: 0021-2148  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 76  
 AB Stacked bridged [MQ( $\mu$ -L)]<sub>n</sub> (M = Fe, Ru; L = pyrazine,  
 1,4-diisocyanobenzene; H<sub>2</sub>Q = phthalocyanine (H<sub>2</sub>Pc), tetrabenzoporphyrine  
 (H<sub>2</sub>TBP)) were doped with I. The properties and conductivities of the  
 doped compds. [MQ( $\mu$ -L)]<sub>n</sub> are reported. The preparation and properties of  
 [MPc( $\mu$ -CN)]<sub>n</sub> (M = Co, Rh, Fe, Mn, Cr) are described. The Co and Fe  
 coordination polymers show room temperature conductivities approx. 10<sup>-2</sup> S/cm  
 without doping, which are in the same range as the I-doped  
 [MPc( $\mu$ -L)]<sub>n</sub>-compds. [PcCo(SCN)]<sub>n</sub> and [TBPCoCN]<sub>n</sub> are also described.  
 ST transition metal macrocycle bridged conductor; pyrazine transition metal  
 macrocycle conductor; diisocyanobenzene transition metal macrocycle  
 conductor; phthalocyanine transition metal bridged conductor;  
 benzoporphyrine transition metal bridged conductor; iodine doped metal  
 complex cond  
 IT Transition metals, compounds  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (conducting polymeric complexes with phthalocyanine and  
 tetrabenzoporphyrin)  
 IT Electric conductivity and conduction  
 (of transition metal phthalocyanine and tetrabenzoporphyrin polymers)  
 IT 86493-46-1D, oxidized, penta iodide, ([Fe(C<sub>32</sub>H<sub>16</sub>N<sub>8</sub>)(C<sub>8</sub>H<sub>4</sub>N<sub>2</sub>))] .0.28I5)  
 86885-54-3D, oxidized, penta iodide, ([Fe(C<sub>36</sub>H<sub>20</sub>N<sub>4</sub>)(C<sub>8</sub>H<sub>4</sub>N<sub>2</sub>))] .0.34I5)  
 87156-20-5 90654-28-7D, oxidized, penta iodide,  
 ([Ru(C<sub>32</sub>H<sub>16</sub>N<sub>8</sub>)(C<sub>8</sub>H<sub>4</sub>N<sub>2</sub>))] .0.4I5) 90654-30-1D, oxidized, penta iodide,  
 ([Fe(C<sub>32</sub>H<sub>16</sub>N<sub>8</sub>)(C<sub>12</sub>H<sub>12</sub>N<sub>2</sub>))] .0.6I5) 90669-43-5D, oxidized, penta iodide,  
 ([Fe(C<sub>32</sub>H<sub>16</sub>N<sub>8</sub>)(C<sub>8</sub>Cl<sub>4</sub>N<sub>8</sub>))] .0.53I5)  
 RL: PRP (Properties)  
 (elec. conductivity of)  
 IT 86493-46-1 86885-54-3 90654-30-1 90669-43-5  
 RL: PRP (Properties)  
 (iodine doping and elec. conductivity of)  
 IT 58482-09-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (oxygen oxidation of, in presence of cyanide)  
 IT 84279-53-8DP, oxidized, penta iodide ([Co(C<sub>32</sub>H<sub>16</sub>N<sub>8</sub>)(CN))] .0.32I5)  
 88076-05-5P 88076-07-7P 92997-88-1P 96030-72-7P 99596-81-3P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and elec. conductivity of)  
 IT 84279-54-9P 90654-31-2P 90654-53-8P 90699-93-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)  
(preparation and thermolysis of)

IT 90654-54-9P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation, iodine doping and thermolysis of)

IT 90383-69-0P 90654-33-4P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation, thermolysis and elec. conductivity of)

IT 84279-53-8P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation, thermolysis, elec. conductivity and reaction with nitrogen bases)

IT 35141-17-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with thiocyanate)

IT 14285-56-4 14285-57-5 53432-32-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(substitution reaction of, with cyanide)

#### REFERENCE 4

AN 101:31666 CA  
TI Synthesis and properties of conducting bridged macrocyclic metal complexes  
AU Hanack, Michael  
CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
SO Molecular Crystals and Liquid Crystals (1984), 105(1-4), 133-49  
CODEN: MCLCAS; ISSN: 0026-8941

DT Journal  
LA English  
CC 76-2 (Electric Phenomena)

AB Stacked bridged macrocyclic metal complexes with pyrazine and 1,4-diisocyanobenzene as the bridging ligands (L), phthalocyanine and tetrabenzoporphine as the macrocycle (Mac), and Fe and Ru as the central metal atoms M were doped with I. The properties and conductivities of the doped compds. [MacML]<sub>n</sub> are reported. The synthesis and properties of Type-C polymers ([PcMCN]<sub>n</sub>, M = Co, Fe, Mn, Cr) with CN as the bridging ligand are described. With Co and Fe these polymers exhibit room-temperature conductivities of .apprx.10<sup>-2</sup> S/cm without doping, which is in the same range as the I-doped [PcML]<sub>n</sub> compds.

ST cond macrocyclic metal complex; iron macrocyclic complex cond; ruthenium macrocyclic complex cond; cobalt macrocyclic complex cond; manganese macrocyclic complex cond; chromium macrocyclic complex cond

IT Electron spin resonance  
Moessbauer effect  
Nuclear magnetic resonance  
(in bridged macrocyclic metal complexes)

IT Electric conductivity and conduction  
(in bridged macrocyclic metal complexes doped with iodine)

IT Infrared spectra  
Raman spectra  
Ultraviolet and visible spectra  
(of bridged macrocyclic metal complexes)

IT 7553-56-2, properties  
RL: PRP (Properties)  
(elec. conduction in bridged macrocyclic metal complexes doped with)

IT 74591-77-8P 84279-53-8P 84279-54-9P 86493-46-1P 86885-54-3P  
88076-05-5P 88076-07-7P 90383-69-0P 90654-28-7P 90654-30-1P  
90654-31-2P 90654-33-4P 90654-53-8P 90654-54-9P 90669-43-5P  
90699-93-7P  
RL: PREP (Preparation)  
(preparation and elec. conduction in)

#### REFERENCE 5

AN 101:16221 CA



TI Synthesis and conductivities of ( $\mu$ -cyano)phthalocyaninatometal compounds  
 AU Datz, Armin; Metz, Josef; Schneider, Otto; Hanack, Michael  
 CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400/1, Fed. Rep. Ger.  
 SO Synthetic Metals (1984), 9(1), 31-40  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 76  
 AB [PcMCN] $_n$  (H<sub>2</sub>Pc = phthalocyanine, M = Fe, Mn, Cr, Co) and [HPcFeCN] $_n$  were prepared. The compds. were characterized by IR, far-IR, UV, thermal, and elemental anal., and partly by <sup>1</sup>H NMR and field-desorption mass spectroscopy. [PcCoCN] and [PcFeCN] $_n$  exhibit d.c. room temperature conductivities approx. 10<sup>-2</sup> S/cm without doping, thereby showing conductivities which are in the same range as the iodine-doped [PcSiO] $_n$ .  
 ST cond phthalocyanine cyano transition metal; cobalt phthalocyanine cyano; manganese phthalocyanine cyano; iron phthalocyanine cyano; chromium phthalocyanine cyano  
 IT Electric conductivity and conduction  
 (of transition metal cyanophthalocyanine monomers and polymers)  
 IT 84279-54-9 84279-55-0 84279-56-1 84303-13-9  
 RL: PRP (Properties)  
 (dark conductivity of)  
 IT 3317-67-7 14285-60-0 14325-24-7  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (oxidation of, in presence of cyanide)  
 IT 89527-87-7P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, spectra and thermal anal. of)  
 IT 84279-51-6P 84279-53-8P 88055-69-0P 88076-05-5P 88076-07-7P  
 90364-11-7P 90364-12-8P 90383-69-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, spectra, dark conductivity and thermal anal. of)  
 IT 14285-56-4 47838-42-6 53432-32-9 53466-60-7  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with alkali metal cyanide in ethanol)

# REFERENCE 6

AN 100:28832 CA  
 TI Synthesis and properties of conducting bridged macrocyclic metal complexes  
 AU Hanack, M.; Datz, A.; Kobel, W.; Koch, J.; Metz, J.; Mezger, M.; Schneider, O.; Schulze, H. J.  
 CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
 SO Journal de Physique, Colloque (1983), (C3, Conf. Int. Phys. Chim. Polym. Conduct., 1982), 633-7  
 CODEN: JPQCAK; ISSN: 0449-1947  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 76  
 AB FePcL<sub>2</sub> and [FePcL] $_n$  (H<sub>2</sub>Pc = phthalocyanine; L = 1,4-diazabicyclo[2.2.2]octane) were prepared from PcFe and L in a melt or in CHCl<sub>3</sub>, resp. [FePcL] $_n$  has an elec. conductivity 4-fold less than that of [FePcL] $_n$  (L1 = pyrazine (pyz), 1,4-di(isocyano)benzene) and [FeQ(pyz)] $_n$  (H<sub>2</sub>Q = octamethylphthalocyanine, octamethoxyphthalocyanine). [RuPc(pyz)] $_n$  was prepared and has an elec. conductivity of 1 + 10<sup>-5</sup> S cm<sup>-1</sup>, less than that of [FePc(pyz)] $_n$ . [FeQ1(pyz)] $_n$  (H<sub>2</sub>Q1 = tetraphenylporphine, dihydroadibenzob[1,1'-1,4,8,11-tetraza[14]annulene) were also prepared and have an elec. conductivity of 4 + 10<sup>-9</sup> and approx. 1 + 10<sup>-5</sup> S cm<sup>-1</sup>, resp. CoPcL<sub>2</sub> was refluxed with MCN (M = Na, K) in EtOH to give M[CoPc(CN)] $_2$  which on heating in H<sub>2</sub>O gave [CoPc(CN)] $_n$  with an elec. conductivity comparable to that for doped analogs of  $\mu$ -oxo and  $\mu$ -fluoro polymers.

[MnPc(CN)]<sub>n</sub> was prepared as above for [CoPc(CN)]<sub>n</sub>. [FePc(CN)]<sub>n</sub> and [FeHPc(CN)]<sub>n</sub> are also conductivity transition metal phthalocyanine polymer cond; manganese porphyrin deriv polymer conducting; cobalt porphyrin polymer conducting; iron porphyrin polymer conducting; ruthenium porphyrin polymer conducting

IT Electric conductivity and conduction  
(of transition metal phthalocyanine polymeric complexes)

IT Transition metals, compounds  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phthalocyanine polymeric complexes, elec.-conducting)

IT 74591-77-8 86493-46-1 87208-57-9 87208-59-1 88055-69-0  
88076-05-5  
RL: PRP (Properties)  
(elec. conductivity of)

IT 84279-53-8P 86493-48-3P 86508-44-3P 87189-21-7P 88055-70-3P  
88076-07-7P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and elec. conductivity of)

IT 84279-51-6P 87195-52-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and thermolysis of)

IT 84279-54-9P 84279-55-0P 84279-56-1P 84303-13-9P 86512-19-8P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 47838-42-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with alkali metal cyanides)

IT 132-16-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with diazabicyclooctane)

IT 16591-56-3 50792-65-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with pyrazine)

#### REFERENCE 7

AN 99:131766 CA  
TI Synthesis and properties of conducting bridged macrocyclic metal complexes  
AU Hanack, Michael; Kobel, Wolfram; Koch, Juergen; Metz, Josef; Schneider, Otto; Schulze, Hans Joachim  
CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
SO Molecular Crystals and Liquid Crystals (1983), 96(1-4), 263-70  
CODEN: MCLCA5; ISSN: 0026-8941

DT Journal  
LA English  
CC 76-1 (Electric Phenomena)

AB The synthesis and the properties of polymeric phthalocyaninatometal complexes are described. In addition to pyrazine and 1,4-diisocyanobenzene, the cyano group is used as a bridging ligand leading to  $\mu$ -cyanophthalocyaninatocobalt(III). The  $\mu$ -cyanophthalocyaninatocobalt(III) shows a conductivity of  $10^{-2}$  S cm<sup>-1</sup> (powder, compressed pellets) at room temperature without I-doping.

ST cond macrocyclic metal complex; iron macrocyclic complex cond; ruthenium macrocyclic complex cond; cobalt macrocyclic complex cond; phthalocyaninatometal complex elec cond

IT Electric conductivity and conduction  
(of bridged macrocyclic metal complexes)

IT 74558-67-1 74591-77-8 81315-39-1 81610-44-8 84279-54-9  
84279-55-0 84279-56-1 84303-13-9 86493-46-1 86493-48-3  
87189-21-7 87195-51-5 87208-57-9 87208-59-1  
RL: PRP (Properties)  
(elec. conductivity of)

IT 84279-51-6P 84279-53-8P 86508-44-3P 86512-19-8P 87195-52-6P  
RL: PREP (Preparation)

(preparation of)  
 IT 132-16-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with 1,4-diazobicyclo[2.2.2]octane)  
 IT 35141-17-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with alkali-metal cyanides)  
 IT 50792-65-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with pyrazine)

# REFERENCE 8

AN 98:82771 CA  
 TI Synthesis, characterization, and conductivity of ( $\mu$ -cyano)(phthalocyaninato)cobalt(III)  
 AU Metz, Josef; Hanack, Michael  
 CS Inst. Org. Chem., Univ. Tuebingen, Tuebingen, D-7400, Fed. Rep. Ger.  
 SO Journal of the American Chemical Society (1983), 105(4), 828-30  
 CODEN: JACSAT; ISSN: 0002-7863  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 76  
 AB Evidence for the synthesis of ( $\mu$ -cyano)(phthalocyaninato)cobalt(III), [PcCoCN]<sub>n</sub> via splitting off NaCN from sodium dicyano(phthalocyaninato)cobaltate(II), NaPcCo(CN)<sub>2</sub>, is presented. Treatment of [PcCoCN]<sub>n</sub> with base mols. L like pyridine, 2-methylpyrazine, piperidine, and butylamine leads to monomeric complexes PcCoCN(L). All compds. are characterized by IR, far-IR, UV, and <sup>1</sup>H NMR spectroscopy, thermal and elemental analyses, and partly by FD mass spectroscopy. The IR data are discussed in detail. The undoped polymer [PcCoCN]<sub>n</sub> exhibits d.c.-dark conductivities around 10<sup>-2</sup> S/cm. When the polymeric structure was decomposed by treatment with a competing ligand, the conductivity was diminished by 6-10 orders of magnitude.  
 ST cobalt cyano phthalocyaninato complex; cond cobalt cyano phthalocyaninato  
 IT Electric conductivity and conduction  
 (of ( $\mu$ -cyano)(phthalocyaninato)cobalt polymer)  
 IT 84279-53-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and amine adduct formation with)  
 IT 84279-51-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and sodium cyanide removal from)  
 IT 84279-54-9P 84279-55-0P 84279-56-1P 84303-13-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)  
 IT 3317-67-7 47838-42-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sodium cyanide)  
 IT 143-33-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactions of, with cobalt phthalocyaninato complexes)

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(FILE 'HOME' ENTERED AT 15:52:57 ON 24 JUL 2008)

FILE 'REGISTRY' ENTERED AT 15:53:17 ON 24 JUL 2008

L1 17947 S PHTHALOCYANINE  
 L2 17948 S (PHTHALOCYANINE OR PHTHALOCYANATO)  
 L3 1578 S L2 AND COBALT  
 L4 613 S L2 AND (WATER OR ETHANOL OR METHANOL OR PYRIDINE)  
 L5 30 S L4 AND (ISOCYANAT? OR CYANO)  
 L6 15 S L5 NOT POLYMER

L7 4 S L6 AND COBALT

FILE 'REGISTRY' ENTERED AT 15:58:14 ON 24 JUL 2008

L8 4 S L7

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(FILE 'HOME' ENTERED AT 15:52:57 ON 24 JUL 2008)

FILE 'REGISTRY' ENTERED AT 15:53:17 ON 24 JUL 2008

L1 17947 S PHTHALOCYANINE

L2 17948 S (PHTHALOCYANINE OR PHTHALOCYANATO)

L3 1578 S L2 AND COBALT

L4 613 S L2 AND (WATER OR ETHANOL OR METHANOL OR PYRIDINE)

L5 30 S L4 AND (ISOCYANAT? OR CYANO)

L6 15 S L5 NOT POLYMER

L7 4 S L6 AND COBALT

FILE 'REGISTRY' ENTERED AT 15:58:14 ON 24 JUL 2008

L8 4 S L7

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